

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

**EP 0 878 202 A2**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
18.11.1998 Bulletin 1998/47

(51) Int. Cl.<sup>6</sup>: **A61L 2/16**, A61L 11/00,  
A61L 9/01

(21) Application number: **98108363.7**

(22) Date of filing: **07.05.1998**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

(30) Priority: **15.05.1997 IT MI971141**

(71) Applicant: **Eurovix S.r.l.**  
**25046 Cazzago San Martino (Prov. of Brescia)**  
**(IT)**

(72) Inventor: **Bonassi, Dario**  
**25046 Cazzago San Martino (Brescia) (IT)**

(74) Representative:  
**Modiano, Guido, Dr.-Ing. et al**  
**Modiano & Associati SpA**  
**Via Meravigli, 16**  
**20123 Milano (IT)**

(54) **Product and method for sanitizing and deodorizing curbside bins for collecting waste in general**

(57) A product and a method for sanitizing and deodorizing curbside bins for collecting waste in general, comprising a uniform mixture of enzyme powders and bacteria powders with mineral salts. A culture medium is also provided for the bacterial strains of the bacteria powders. The enzyme and bacteria powders are provided in a percentage between 0.1 and 20% by weight.

**EP 0 878 202 A2**

## Description

The present invention relates to a product and a method for sanitizing and deodorizing curbside bins for collecting waste in general.

Conventionally, in collecting municipal and non-municipal solid or liquid waste, after emptying the curbside bin or container by means of trucks known as trash trucks or trash compactor trucks, washing is periodically performed with specifically provided trucks, known as curbside bin washer trucks, using hot water or cold water or steam and sanitizing or disinfectant products of the chemical type, such as for example quaternary ammonium salts or products based on chlorine, formaldehyde or others.

After washing and drying, which is inevitably never perfect, the container or curbside bin of various sizes is deposited on the ground and is ready for use, i.e., to receive further waste.

Usually after a short period of time, due to the residual deposit of eluate and percolate, or of the parts of the waste that remain attached to the walls, or due to substances such as fungi, disease-causing bacteria and so forth, fermentation gases are released which produce unpleasant odors and cause discomfort in the environment and to people, both operators and users, since toxic gases, fungi, spores and disease-causing bacteria may be spread.

Moreover, the use of chemicals is effective for a short time, since the active principles contained in said chemicals lose their effectiveness one or two days after the treatment; accordingly, after this period the curbside bin usually resumes releasing unpleasant odors.

One of the aim of the present invention is to solve the above problem, by providing a product and a method for sanitizing and deodorizing curbside bins for collecting waste in general which can act both on the liquid material and on the solid material of the waste, achieving its neutralization for a very long period of time, which can vary between seven and twenty days, as a function of external weather conditions.

Within the scope of this aim, a particular object of the present invention is to provide a method which allows to sanitize and deodorize a curbside bin or container by using products in powder form which adhere to the walls of the container.

Another object of the present invention is to provide a product which can be applied very simply and quickly both manually and automatically, always achieving optimum results.

Another object of the present invention is to provide a product and a method which, by virtue of its particular characteristics of execution, is capable of giving the greatest assurances of reliability and safety in use and is also competitive from a merely economical point of view.

This aim, these objects and others which will become apparent hereinafter are achieved by a product

for sanitizing and deodorizing curbside bins for collecting waste in general, according to the present invention, characterized in that it comprises a mix of enzyme powders and bacteria powders, preferably with mineral salts, a culture medium being further provided for the bacterial strains of said bacteria powders. Said enzyme and bacteria powders are advantageously provided in a percentage between 0.1 and 20% by weight.

Further characteristics and advantages of the present invention will become apparent from the following description of a preferred but not exclusive embodiment of a product and a method for sanitizing and deodorizing curbside bins for collecting waste in general.

The product for sanitizing and deodorizing curbside bins for collecting waste in general has the important particularity that it is constituted by a uniform mix of enzyme and bacteria powders which are distributed on the walls of the waste containers.

Said enzyme powders are preferably compositions containing at least one enzyme selected from the group comprising amylase, lipase, cellulase, protease, while bacteria powders comprise one or more bacterial strains, such as cocci and bacilli, with a suitable culture medium which can be constituted by agar-agar.

Said enzyme and bacteria powders are mixed with mineral salts in a percentage preferably between 0.1 and 20% by weight.

According to preferred embodiments, it is provided a powder with mixed particle size which comprises  $\alpha$ -amylase enzymes,  $\beta$ -amylase enzymes, pentosanase enzymes, glucoamylase enzymes, cellulase enzymes, lactase enzymes, pancrease enzymes, protease enzymes, phosphorylase enzymes, hemicellulase enzymes, pectinase enzymes,  $\beta$ -glucanase enzymes, pullulanase enzymes and  $\beta$ -lactamase enzymes.

The bacteria are preferably constituted by micrococci and bacilli placed in a culture medium such as agar-agar.

The mineral salts are advantageously constituted by mineral salts of calcium and magnesium.

It is also possible to provide mordenite and dolomite, Lithothamnium calcareum algae, and active principles of Fucus and Laminaria.

The above-described composition is uniformly mixed and then packaged and prepared for manual or mechanical distribution on the walls of curbside bins or containers with an average sprinkling of 25 to 150 g as a function of the volume of the curbside bin.

As mentioned earlier, said spreading of the powders on the walls of the containers or curbside bins can be performed every seven to twenty days according to the user and to the environmental conditions, taking into account the fact that high temperatures increase the frequency of said treatments.

From the above description it is thus evident that the invention achieves the intended aim and objects; in particular, the fact is stressed that a product and a

method for sanitizing and deodorizing curbside bins are provided which change the conventional criterion of using liquid products which are spread during washing and do not allow long-lasting action but are instead constituted by powders which, by adhering to the surfaces, determine a sanitizing process which is not chemical but enzyme- and bacteria-based, thus fully eliminating unpleasant odors.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

All the details may also be replaced with other technically equivalent elements.

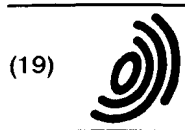
#### Claims

1. A product for sanitizing and deodorizing curbside bins for collecting waste in general, characterized in that it comprises a mix of enzyme powders and bacteria powders with mineral salts, a culture medium being further provided for the bacterial strains of said bacteria powders, said enzyme and bacteria powders being provided in a percentage between 0.1 and 20% by weight.
2. A sanitizing and deodorizing product according to claim 1, characterized in that said enzyme are selected from the group consisting of amylase, lipase, cellulase, protease and mixtures thereof.
3. A sanitizing and deodorizing product according to the preceding claims, characterized in that said enzymes are selected from the group consisting of  $\alpha$ -amylase enzymes,  $\beta$ -amylase enzymes, pentosanase enzymes, glucoamylase enzymes, cellulase enzymes, lactase enzymes, pancrease enzymes, protease enzymes, phosphorylase enzymes, hemicellulase enzymes, pectinase enzymes,  $\beta$ -glucanase enzymes, pullulanase enzymes,  $\beta$ -lactamase enzymes and mixtures thereof.
4. A sanitizing and deodorizing product according to one or more of the preceding claims, characterized in that said bacteria comprise at least one among the bacterial strains of micrococci and bacilli.
5. A sanitizing and deodorizing product according to one or more of the preceding claims, characterized in that said mineral salts comprise mineral salts of calcium and magnesium.
6. A sanitizing and deodorizing product according to one or more of the preceding claims, characterized in that said culture medium for bacterial strains is constituted by agar-agar.
7. A sanitizing and deodorizing product according to

one or more of the preceding claims, characterized in that it comprises mordenite and dolomite.

8. A sanitizing and deodorizing product according to one or more of the preceding claims, characterized in that it comprises Lithothamnium calcareum algae.
9. A sanitizing and deodorizing product according to one or more of the preceding claims, characterized in that it comprises active principles of Fucus and Laminaria.
10. A method for sanitizing and deodorizing curbside bins for collecting waste in general, characterized in that it consists in spreading inside a curbside bin and the like a mix of enzyme powders and of bacteria powders with mineral salts, a culture medium being further provided for the bacterial strains of said bacteria powders, said enzyme and bacteria powders being provided in a percentage between 0.1 and 20% by weight.
11. A method according to claim 10, characterized in that said mix is sprinkled in an amount between 25 and 150 g per curbside bin.

**THIS PAGE BLANK (USPTO)**



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 0 878 202 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**22.11.2000 Bulletin 2000/47**

(51) Int. Cl.<sup>7</sup>: **A61L 2/16**, A61L 11/00,  
A61L 9/01

(43) Date of publication A2:  
**18.11.1998 Bulletin 1998/47**

(21) Application number: **98108363.7**

(22) Date of filing: **07.05.1998**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

(30) Priority: **15.05.1997 IT MI971141**

(71) Applicant: **Eurovix S.r.l.**  
**25046 Cazzago San Martino (Prov. of Brescia)**  
**(IT)**

(72) Inventor: **Bonassi, Dario**  
**25046 Cazzago San Martino (Brescia) (IT)**

(74) Representative:  
**Modiano, Guido, Dr.-Ing. et al**  
**Modiano & Associati SpA**  
**Via Meravigli, 16**  
**20123 Milano (IT)**

(54) **Product and method for sanitizing and deodorizing curbside bins for collecting waste in general**

(57) A product and a method for sanitizing and deodorizing curbside bins for collecting waste in general, comprising a uniform mixture of enzyme powders and bacteria powders with mineral salts. A culture medium is also provided for the bacterial strains of the bacteria powders. The enzyme and bacteria powders are provided in a percentage between 0.1 and 20% by weight.

**EP 0 878 202 A3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 98 10 8363

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Clg)
A	FR 2 658 077 A (COHAS PATRICE; COHAS PASCAL) 16 August 1991 (1991-08-16) * claims *	1-6	A61L2/16 A61L11/00 A61L9/01
A	FR 2 665 638 A (COHAS PATRICE; COHAS PASCAL) 14 February 1992 (1992-02-14) * claims *	1-6	
A	US 4 034 078 A (VAN HORN EARL THOMAS) 5 July 1977 (1977-07-05) * claims; examples *	1	
			TECHNICAL FIELDS SEARCHED (Int.Clg)
			A61L
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>29 September 2000</b>	Examiner <b>ESPINOSA, M</b>
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (Prelim)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 10 8363

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

29-09-2000

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
FR 2658077	A	16-08-1991	NONE		
FR 2665638	A	14-02-1992	NONE		
US 4034078	A	05-07-1977	CA	987252 A	13-04-1976
			CH	554676 A	15-10-1974
			DE	2137657 A	24-08-1972
			FR	2125251 A	29-09-1972
			GB	1332066 A	03-10-1973
			IT	942166 B	20-03-1973
			NL	7112542 A, B	18-08-1972

EPO FORM P0468

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**THIS PAGE BLANK (USPTO)**